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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/591,731

06/12/2000

Scott C. Willis

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3651

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7590

05/05/2004

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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2634

8

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/591,731

Applicant(s)

WILLIS ET AL.

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 6-9 is/are allowed.
- 6) ☒ Claim(s) 10 and 22-33 is/are rejected.
- 7) ☒ Claim(s) 5, 11-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 10, filed March 22 2004, have been fully considered and are persuasive. The rejections of claims 1-4, 6-9 have been withdrawn.
2. Applicant's arguments filed March 22 2004 regarding claims 10 and 31 have been fully considered but they are not persuasive.

Argument: Smith does not teach a pulse width modulator whose fundamental frequency is time-varying as recited in amended claim 10.

Response: Smith teaches a pulse width modulator whose fundamental frequency is time-varying. In column 26 lines 14-20 where frequency is 400kHz, and column 33 lines 45-55 where frequency is 500KHz are two examples of FIG.8/FIG.11A that the fundamental frequency is time-varying.

The 103 rejections of claims 10, 31-33 are upheld.

Claim Objections

3. Claims 5, 12-21, 26, and 27 are objected to because of the following informalities:
Claim 5, The "100 and 1000 kilohms" should be "100 kilohms and 1000 kilohms".
Claim 12, line 5, "the binary counting having" should be "the binary counter having".
Claim 26, "100 and 1000 kilohms" should be "100 kilohms and 1000 kilohms".
Claim 27, "100 and 1000 kilohms" should be "100 kilohms and 1000 kilohms".

Appropriate corrections are required.

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Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 22-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 recites the limitation "the pulse train source" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10, & 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner (US 5006973) in view of Smith (US 5309344).

Regarding **claims 10 & 31-32** except to specify the PWM whose fundamental frequency is time-varying, Turner discloses all subject matter claimed: a power source coupled to the PWM (45-49 Fig.3); a resistor/capacitor network (R6-8, C23-25 Fig.8 comprised the network, wherein the time constant of RC changes based upon the binary counter where the SYNC is provided to alter the resistor/capacitor time constant, counter CNTR Fig.7); incrementing means for

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incrementing a binary count (CO & FF1 Fig.7); altering means (R6-8 Fig.8, the PWM oscillator comprised the altering means, where each resistor is coupled to an output of a binary counter and coupled to a first voltage, the node SG) coupled between the incrementing means and the resistor/capacitor network. However Smith teaches the varying frequency (column 26 lines 14-20 where frequency is 400kHz, column 33 lines 45-55 where frequency is 500KHz that the fundamental frequency is time-varying). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a varying frequency PWM taught by Smith in Turner's apparatus to provide a more efficient apparatus to improve the EMI emissions and the power dissipation losses (Abstract, column 8 lines 33-48).

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner (US 5006973) in view of Smith (US 5309344) as applied to claim 31 above, and further in view of Korcharz et al. (US 6049471).

Regarding **claim 33**, further Korcharz et al. teaches a resistor divider (210 Fig.10) coupled between the output of the PWM and an input of the binary counter (294, 290 Fig.10). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the resistor divider taught by Korcharz et al. in Turner's apparatus to smoothly control the cycle of PWM output (column 17 lines 45-65).

Allowable Subject Matter

9. Claims 1-4 and 6-9 are allowed.
10. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. Claims 5 and 12 are objected to informality, but would be allowable if rewritten to overcome the objections.
12. Claims 13-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
April 28, 2004


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600